

# DATA ANALYST TO

## DATA SCIENTIST



8 Week-Roadmap



## \*Disclaimer\*

The whole transition from Data Analyst to Data Scientist is really hard for working professionals in 8 weeks.

This doc is just to help you understand the topics you need to cover, and the estimated time if you're already into the transition phase, this doc will help you greatly.

## WEEK 1

# Python Programming for Data Science

### DAY 1-3

**Basics of Python; Variables, Data Types, and Operations.**

#### Practice:

Solve 5 problems on basic operations and data types on HackerRank.

### DAY 4-5

**Control Structures; Loops and Conditional Statements.**

#### Practice:

Create a Python script to filter even numbers from a list and use conditional statements to categorize them.

## DAY 6-7

# Functions and Modules; Writing Reusable Code.

### Practice:

Write a function to calculate the factorial of a number and another to check if a number is prime.

## WEEK 2

# Advanced Python and Introduction to Pandas

### DAY 1-2

Advanced Data Structures; Lists, Dictionaries, Sets, and Tuples.

#### Practice:

Implement a dictionary-based phonebook application.

### DAY 3-4

Introduction to Pandas; Series and DataFrames.

#### Practice:

Load a CSV file using Pandas and perform basic data exploration.

## DAY 5-7

# Data Manipulation with Pandas.

### Practice:

Perform data cleaning on a dataset: handle missing values, duplicate data, and filter rows/columns.

# **Exploratory Data Analysis (EDA)**

## **DAY 1-2**

### **Visualization with Matplotlib and Seaborn.**

#### **Practice:**

Create a histogram of a dataset's numerical feature and a bar plot of a categorical feature.

## **DAY 3-4**

### **Statistical Foundations of EDA.**

#### **Practice:**

Calculate mean, median, mode, variance, and standard deviation of a dataset.

## DAY 5-7

### Practical EDA on Real Datasets.

#### Practice:

Conduct a full EDA on a dataset: identify outliers, perform hypothesis testing, and generate insights.

# Introduction to Machine Learning

## DAY 1-2

Overview of Machine Learning; Types of ML.

### Practice:

Classify problems into regression, classification, or clustering.

## DAY 3-4

Linear Regression.

### Practice:

Implement a simple linear regression model on a dataset.

## DAY 5-7

# Logistic Regression and Decision Trees.

### Practice:

Build a logistic regression model and a decision tree to classify binary outcomes in a dataset

# Intermediate Machine Learning

## DAY 1-3

**Ensemble Methods; Random Forests and Gradient Boosting.**

### Practice:

Compare the performance of a decision tree, random forest, and gradient-boosted model on the same dataset.

## DAY 4-5

**Clustering Techniques; K-Means and Hierarchical Clustering.**

### Practice:

Implement a simple linear regression model on a dataset.

## DAY 6-7

### Dimensionality Reduction; PCA.

#### Practice:

Apply PCA on a high-dimensional dataset and visualize the results.

# Advanced Topics in Machine Learning

## DAY 1-3

### Introduction to Neural Networks and Deep Learning.

#### Practice:

Use TensorFlow or PyTorch to build a basic neural network for a classification problem.

## DAY 4-7

### Natural Language Processing (NLP) Basics.

#### Practice:

Implement a simple bag-of-words model and perform sentiment analysis on text data.

# SQL for Data Science

## DAY 1-2

**Advanced SQL Queries; Subqueries and Window Functions.**

### Practice:

Write SQL queries to perform analytical functions over partitioned data.

## DAY 3-4

**Data Warehousing Concepts.**

### Practice:

Design a simple star schema for a retail database.

## DAY 5-7

# ETL Processes; Introduction to Data Pipelines.

### Practice:

Create an SQL script to transform and load data from one table to another.

## WEEK 8

# Real-World Projects and Portfolio Building

### DAY 1-3

#### Complete a Capstone Project.

##### Practice:

Choose a problem statement and work on a project from scratch using datasets from Kaggle or GitHub.

### DAY 4-5

#### Document Your Project.

##### Practice:

Write a detailed report of your project, including the problem statement, your approach, methodologies used, and insights gained.

## DAY 6-7

### Portfolio and Resume Building.

#### Practice:

Compile your projects and analyses into a professional portfolio. Update your resume to highlight your newly acquired data science skills and projects.

# Conclusion

**The progress of everyone will vary, so KEEP IN MIND THE FOLLOWING:**

- Individuals with a strong background in analytics, programming, or a related field may progress faster than those with less relevant experience.
- The amount of time dedicated weekly to learning and practicing these skills plays a crucial role. The guide assumes a full-time commitment, which might not be feasible for everyone.
- Everyone has a unique learning pace. Some may grasp new concepts quickly, while others may need more time to fully understand and apply them.
- Depth of Knowledge: While this guide covers essential topics, mastery in data science often requires going beyond the basics, especially for highly specialized roles or industries.
- Access to Resources: Availability of learning resources, mentorship, and hands-on projects can influence the speed and effectiveness of the transition.

Happy Learning



## WHY BOSSCODER?

 **1000+** Alumni placed at Top Product-based companies.

 More than **136% hike** for every **2 out of 3** working professional.

 Average package of **24LPA**.

The syllabus is most up-to-date and the list of problems provided covers all important topics.

Lavanya  
 Meta



Course is very well structured and streamlined to crack any MAANG company

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